

- Dates:** September 16<sup>th</sup> -20<sup>th</sup> 2019
- Venue:** Radboud university medical center, Nijmegen, The Netherlands  
Street address: Geert Grootteplein 21 or 27, route 127, Nijmegen
- Lecturers:** Dr. Kim Wever, Dr. Thomas Steckler, Prof. Malcolm Macleod, Lee Monk, Dr. Zsanett Bahor, Prof. Martin Michel, Dr. Judith van Luijk, and Dr. Rob de Vries

## Day-to-day program

### Day 1 (Monday September 16<sup>th</sup> )

Improving robustness of animal studies: rationale, study design and study execution				
#	Time	Mins	Topic	Lecturer
1	9:00	10	Welcome, Summer School objectives, program preview	Kim Wever
2	9:10	50	Introduction of participants and lecturers: why are we here?	All
3	10:00	60	Lecture: Origins of poor data robustness	Thomas Steckler
	11:00	15	Break	-
4	11:15	60	Lecture: Rigor in preclinical research	Malcolm Macleod
5	12:15	30	Plenary discussion: Stakeholders in research rigor: who is in the greatest need of higher research quality standards?	All
	12:45	60	Lunch	-
6	13:45	15	Lecture: Confirmatory versus exploratory research	Malcolm Macleod
7	14:00	40	Lecture: Bias in primary research, what is it and how do we prevent it?	Kim Wever
8	14:40	20	Practical: Formulating bias domains and measures to reduce the risk of selection bias, performance bias, and detection bias	Kim Wever & Kaitlyn Hair
9	15:00	15	Interactive discussion of the practical assignment	Kim Wever & Kaitlyn Hair
	15:15	15	Break	-
10	15:30	75	Lecture and practical: Hands-on randomisation and blinding	Judith van Luijk
13	16:45	10	Recap and closing	Lee Monk
	16:55		End	-
	18:00		Joint dinner	-

### Day 2 (Tuesday September 17<sup>th</sup> )

Improving robustness of animal studies: data analysis and reporting				
#	Time	Mins	Topic	Lecturer
1	9:00	60	Lecture and practical: Other types of validity - external, construct, face and predictive	Zsanett Bahor
3	10:00	30	Lecture: Types of data and how to describe them	Martin Michel
	10:30	15	Break	-
3	10:45	30	Lecture: Power and p-values	Martin Michel
4	11:15	30	Lecture: Choosing the best statistical test	Martin Michel
5	11:45	45	Lecture: Presenting data in publications	Martin Michel
	12:30	60	Lunch	-
7	13:30	60	Practical: Designing your own analysis plan	Martin Michel & Ezgi Tanriver
8	14:30	30	Lecture: Researcher degrees of freedom and preregistration	Kim Wever
9	15:00	60	Lecture and practical: Assessing reporting quality according to	Judith van Luijk

			the ARRIVE guidelines	
10	16:00	15	Recap and closing	Lee Monk
	16:15		End	-

**Day 3 (Wednesday September 18<sup>th</sup>)**

Hands-on training in systematic review and meta-analysis of animal studies				
#	Time	Mins	Topic	Lecturer
1	09:00	30	Quiz and lecture: Introduction to systematic reviews of animal studies	Rob de Vries
2	09:30	15	Lecture: Comprehensive searching-identifying all relevant studies	Alice Tillema
3	09:45	60	Practical: Developing comprehensive search strategies	Rob de Vries and Alice Tillema
4	10:45	15	Practical: Screening and selecting studies (inclusion/exclusion)	Judith van Luijk
	11:00	15	Break	-
5	11:15	25	Practical: External validity and extracting study characteristics	Rob de Vries
6	11:40	20	Lecture: Assessing internal validity in the context of SR	Judith van Luijk
	12:00	60	Lunch	-
7	13:00	30	Practical: Performing a risk of bias assessment	Judith van Luijk
8	13:30	60	Lecture: Data extraction and meta-analysis	Rob de Vries
	14:30	15	Break	-
9	14:45	65	Practical: Meta-analysis	Rob de Vries and Judith van Luijk
10	15:50	10	Recap Quiz and closure	Judith van Luijk
	16:00		End	-

**Day 4 (Thursday September 19<sup>th</sup>)**

Implementation of measures to improve research rigour				
#	Time	Mins	Topic	Lecturer
1	9:00	15	Journal Club on example papers illustrating the need for higher standards in research rigor: introduction and forming groups	Junior researchers
2	9:15	45	Journal Club: groups read papers and prepare presentations	Junior researchers
	10:00	15	Break	-
3	10:15	45	Journal Club: groups present on their papers	Junior researchers
4	11:00	45	Lecture: Quality management systems - relevance and benefits	Lee Monk
5	11:45	60	Interactive Workshop: Quality management systems	Lee Monk
	12:45	60	Lunch	-
6	13:45	30	Open discussion: What to do when the standards discussed during this Summer School cannot be implemented	All
7	14:15	30	Lecture: Culture of tolerating neutral results: from identifying key stakeholders to real-life examples and implications	Thomas Steckler / Anton Bupalov
8	14:45	30	Practical: What to take home? (including coffee)	Kim Wever
9	15:15	60	Presentations of take home messages	Kim Wever
10	16:15	15	Surveys, feedback, closing remarks & adjourn	Kim Wever
	16:30		End	-